

What is Claimed:

1           1. A cable routing system facilitating interconnection between  
2 a computer system and a chassis that may be extended and retracted with  
3 respect to the computer system along at least one support member, said  
4 cable routing system comprising:

5                 a folding arm assembly supported by the at least one support  
6 member such that said folding arm assembly is moveable between a  
7 retracted position when the chassis is retracted with respect to the computer  
8 system and an extended position when the chassis is extended with respect  
9 to the computer system, said folding arm assembly defining at least one  
10 channel for routing a cable between the chassis and the computer system;  
11 and

12                 a strain relief supported by the at least one support member and  
13 positioned between said folding arm assembly and a termination point of the  
14 cable such that said strain relief substantially stabilizes the cable at the  
15 termination point.

1           2. The cable routing system of claim 1 wherein the support  
2 member includes an chassis support member slidingly engaged with a frame  
3 support member.

1           3. The cable routing system of claim 2 wherein the chassis and  
2 said strain relief are coupled to the chassis support member of the support  
3 member, and said folding arm assembly is coupled to the frame support  
4 member.

1           4. The cable routing system of claim 1 wherein said folding  
2 arm assembly includes at least two arm portions, each of said arm portions  
3 defining a portion of said channel.

1           5. The cable routing system of claim 4 wherein said at least  
2 two arm portions are hingedly coupled to one another, thereby facilitating

3        guided movement of cables held within said portions of said channel as the  
4        chassis is extended and retracted with respect to the computer system.

1                6. The cable routing system of claim 4 wherein at least one of  
2        said arm portions is hingedly coupled to said strain relief, and another of said  
3        arm portions is hingedly coupled to the support member, said one and said  
4        another of said arm portions being hingedly coupled to one another, such that  
5        as the chassis extends and retracts with respect to the computer system said  
6        strain relief moves along the support member with the chassis, and said arm  
7        portion hingedly coupled to said strain relief facilitates movement of said  
8        folding arm assembly between the extended and retracted position as the  
9        chassis extends and retracts with respect to the computer system.

1                7. The cable routing system of claim 1 wherein the at least  
2        one support member includes two rail systems, said cable routing system  
3        additionally comprising a rail clip coupled to each of said two rail systems and  
4        a strut extending between said two rail clips, said strut at least partially  
5        supporting said folding arm assembly.

1                8. The cable routing system of claim 7 wherein each of said  
2        rail clips is configured for compression and expansion in at least one  
3        dimension thereof through actuation of a spring loaded mechanism included  
4        in said rail clip such that each of said rail clips is coupled to a respective one  
5        of said rail systems by engaging each of said spring loaded mechanisms with  
6        a respective aperture of each of said rail systems.

1                9. A computer system comprising:

2                a frame;

3                a chassis that may be extended and retracted with respect to  
4        said frame;

5                a support member along which said chassis is extended and  
6        retracted with respect to said frame;

7                   a folding arm assembly at least partially supported by said  
8 support member such that said folding arm assembly is moveable between a  
9 retracted position when said chassis is retracted with respect to the frame  
10 and an extended position when said chassis is extended with respect to the  
11 frame, said folding arm assembly defining at least one channel for routing a  
12 cable between the chassis and said frame; and

13                   a strain relief at least partially supported by said support  
14 member and positioned between said folding arm assembly and a termination  
15 point of the cable such that said strain relief substantially stabilizes the cable  
16 at the termination point.

1                 10. The computer system of claim 9 wherein said support  
2 member includes a chassis support member slidingly engaged with a frame  
3 support member.

1                 11. The computer system of claim 10 wherein said chassis and  
2 said strain relief are coupled to said chassis support member, and said folding  
3 arm assembly is coupled to said frame support member.

1                 12. The computer system of claim 9 wherein said folding arm  
2 assembly includes at least two arm portions, each of said arm portions  
3 defining a portion of said channel.

1                 13. The computer system of claim 12 wherein said at least two  
2 arm portions are hingedly coupled to one another, thereby facilitating guided  
3 movement of cables held within said portions of said channel as the chassis is  
4 extended and retracted with respect to the computer system.

1                 14. The computer system of claim 12 wherein at least one of  
2 said arm portions is hingedly coupled to said strain relief, and another of said  
3 arm portions is hingedly coupled to said support member, said one and said  
4 another of said arm portions being hingedly coupled to one another, such that  
5 as the chassis extends and retracts with respect to the frame said strain relief  
6 moves along said support member with said chassis, and said arm portion  
7 being hingedly coupled to said strain relief facilitates movement of said

8 folding arm assembly between the extended and retracted position as said  
9 chassis extends and retracts with respect to the computer system.

1               15. The computer system of claim 9 additionally comprising a  
2 rail clip coupled to said support member and a strut coupled to said support  
3 member, said strut at least partially supporting said folding arm assembly.

1               16. The cable routing system of claim 15 wherein said rail clip is  
2 configured for compression and expansion in at least one dimension thereof  
3 through actuation of a spring loaded mechanism included in said rail clip such  
4 that said rail clip is coupled to said support member.

1               17. An arm assembly for holding a cable interconnecting a  
2 computer system and a chassis that may be extended and retracted with  
3 respect to the computer system, said arm assembly comprising:

4               a plurality of arm portions, each of said arm portions comprising  
5 a side surface and a base surface together at least partially defining a channel  
6 configured to receive a cable,

7               said arm portions being hingedly connected to one another  
8 thereby facilitating extension and retraction of said arm assembly when the  
9 chassis is extended and retracted with respect to the computer system,

10              wherein a ratio of a height of said side surface to a width of said  
11 base surface is at least about 4 to 1.

1               18. The arm assembly of claim 17 wherein said arm assembly is  
2 configured for pivotal engagement with a strain relief positioned between said  
3 arm assembly and the chassis, the strain relief substantially stabilizing a cable  
4 at the strain relief, the cable extending from the chassis to said channel  
5 defined by said arm portions.

1               19. The arm assembly of claim 17 wherein said ratio is  
2 approximately 5-1/3 to 1.

1           20. A support assembly for supporting a chassis that may be  
2 extended and retracted with respect to a frame, said support assembly  
3 comprising:

4           a rail system including a chassis portion and a frame portion, the  
5 chassis portion being coupled to the chassis and slidably moveable with  
6 respect to said frame portion between a retracted position when the chassis  
7 is retracted with respect to the frame and an extended position when said  
8 chassis is extended with respect to the frame, said frame portion being  
9 configured to be coupled to the frame; and

10           a plurality of arm portions hingedly connected to one another  
11 and extending between said chassis portion of said rail system and said frame  
12 portion of said rail system such that said arm portions are retracted with  
13 respect to one another when the chassis is retracted with respect to the  
14 frame, and said arm portions are extended with respect to one another when  
15 the chassis is extended with respect to the frame, each of said arm portions  
16 defining a channel configured to receive a cable.

1           21. The support assembly of claim 20 additionally comprising a  
2 strain relief positioned between said arm portions and the chassis, said strain  
3 relief substantially stabilizing a cable at the strain relief, the cable extending  
4 from the chassis to said channels defined by said arm portions.

1           22. The support assembly of claim 21 wherein said strain relief  
2 is coupled to said chassis portion such that said strain relief moves with the  
3 chassis during extension and retraction of the chassis with respect to the  
4 frame.

1           23. The support assembly of claim 20 wherein said rail system  
2 includes two of said chassis portion and two of said frame portion, each of  
3 said chassis portions being coupled to the chassis and slidably engaged with  
4 a respective one of said frame portions, each of said frame portions being  
5 configured to be coupled to the frame such that said chassis portions are  
6 moveable with respect to said frame portions between said retracted position

7       when the chassis is retracted with respect to the frame and said extended  
8       position when said chassis is extended with respect to the frame.

1           24. The support assembly of claim 20 wherein said chassis  
2       portion is an inner portion of said rail system, and said frame portion is an  
3       outer portion of said rail system, said inner portion being slidably moveable  
4       with respect to said outer portion.

1           25. A method of routing a cable between a computer system  
2       and a chassis that may be extended and retracted with respect to the  
3       computer system along at least one support member, said method  
4       comprising the steps of:

5               positioning the cable at least partially in a channel defined by a  
6       folding arm assembly disposed between the computer system and the chassis  
7       and supported by the support member; and

8               coupling the cable to a strain relief positioned between the  
9       folding arm assembly and a termination point of the cable such that the strain  
10      relief substantially stabilizes the cable at the termination point.

1           26. The method of claim 25 additionally comprising the step of:  
2               terminating a first end of the cable to the termination point, the  
3       termination point being between the chassis and the strain relief.

1           27. The method of claim 26 additionally comprising the step of:  
2               routing the cable from the channel to a destination of the cable  
3       within the computer system.

1           28. The method of claim 27 additionally comprising the step of:  
2               terminating a second end of the cable to the destination of the  
3       cable within the computer system.

1           29. The method of claim 25 wherein said positioning step  
2 includes positioning the cable at least partially in a plurality of channels  
3 defined by the folding arm assembly, the plurality of channels being hingedly  
4 connected to one another such that the plurality of channels provides a  
5 portion of a routing path for the cable between the chassis and the computer  
6 system.